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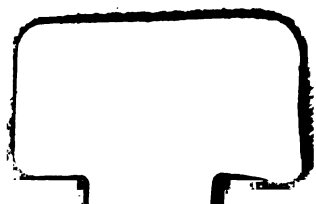
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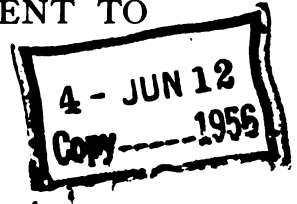
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U.S. Congress, House. Committee on
Appropriations.
Hearings...

ADDITIONAL SUPPLEMENT TO
HEARINGS



BEFORE THE

SUBCOMMITTEE OF THE COMMITTEE
ON APPROPRIATIONS,

HOUSE OF REPRESENTATIVES,

CONSISTING OF

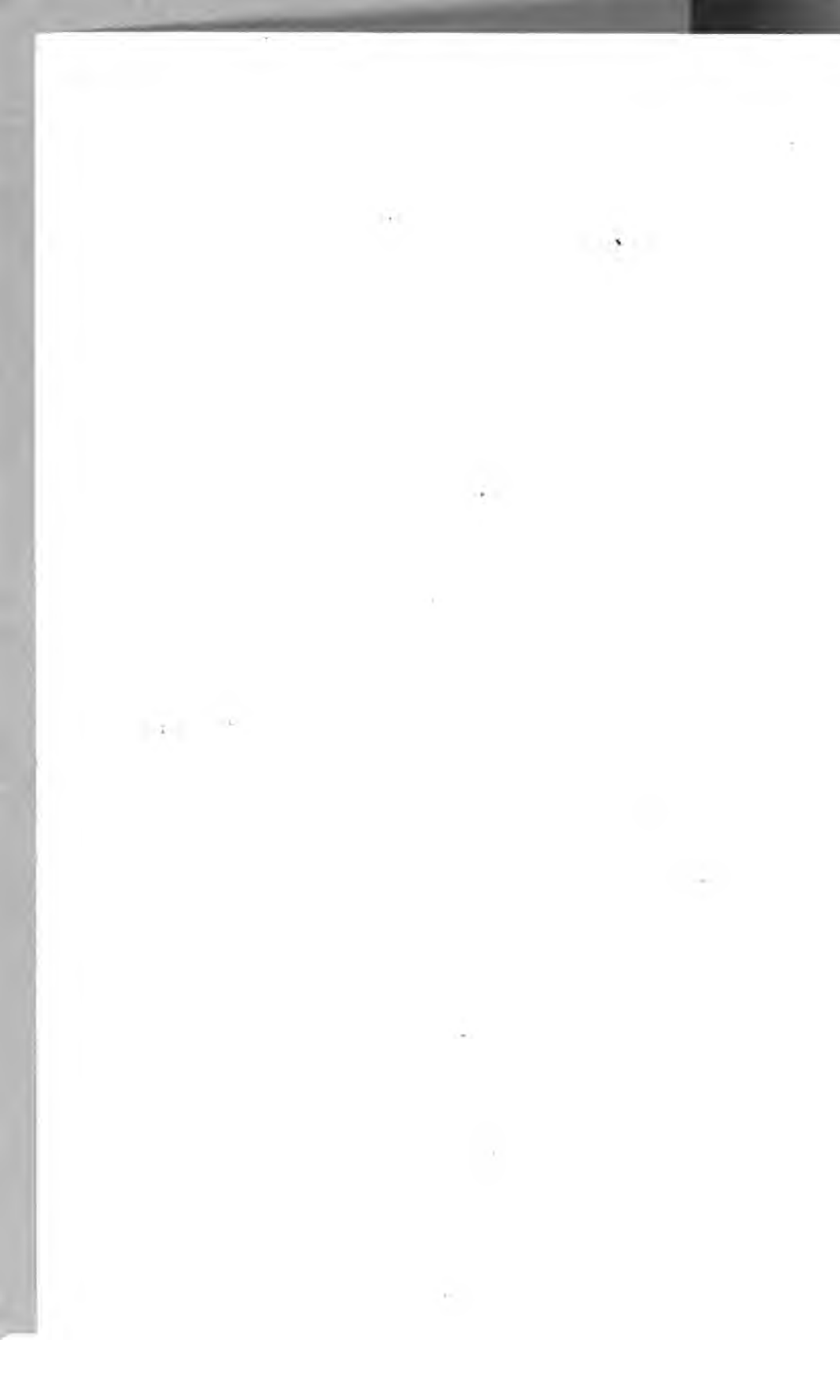
Messrs. WALTER I. SMITH (chairman), J. W. KEIFER, J. V. GRAFF,
J. J. FITZGERALD, and STEPHEN BRUNDIDGE, Jr.,

IN CHARGE OF

THE FORTIFICATION APPROPRIATION BILL.

SMOKELESS POWDER.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1907.



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1906 &
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THE FORTIFICATION APPROPRIATION BILL.

COMMITTEE ON APPROPRIATIONS,
Thursday, January 24, 1907.

SMOKELESS POWDER.

STATEMENT OF MR. J. A. HASKELL, VICE-PRESIDENT OF THE E. I. DU PONT DE NEMOURS POWDER COMPANY, ACCOMPANIED BY MR. E. G. BUCKNER AND MR. W. B. DWINNELL, REPRESENTING THAT COMPANY.

Mr. SMITH. Will you please give your name?

Mr. HASKELL. J. A. Haskell.

Mr. SMITH. What is your business?

Mr. HASKELL. Vice-president of the E. I. Du Pont de Nemours Powder Company.

Mr. SMITH. You may proceed with your statement in your own way.

Mr. HASKELL. Mr. Chairman, from time to time in the past numerous statements have appeared in the public press and in the Congressional Record regarding the relationship of the company I am connected with in the matter of furnishing powder to the United States Government. It seems only fitting, in view of the many misstatements that have been made, that we should state such facts as we may with propriety, to tend at least to put our position clearly before the United States.

Great stress seems to have been laid upon the matter of certain patents covering inventions or so-called inventions of officers of the United States Navy. It is claimed that the Du Pont Company, through its acquisition of the International Smokeless Powder Company, which owned the smokeless-powder patents originally taken out by Admiral Converse and Lieutenant Bernadou, has led to the monopoly of the powder business, at least so far as the military business of the United States is concerned. Regarding that, I would like to say that several of the patents taken out by Messrs. Bernadou and Converse are not owned by the Du Pont Powder Company.

Mr. SMITH. Right there; can you state what ones are owned by the Du Pont Powder Company, so that they can be identified?

Mr. HASKELL. I shall be glad to furnish you the numbers. Those that we regard as unimportant are patents covering a blending of the nitrocellulose for the purpose of establishing a mean percentage of nitrogen in order to meet the specifications, whatever they may be, the blending of a higher and lower grade. Those patents amount to nothing because of their lack of novelty. Many years before those patents were taken out, the Du Pont Company, and almost every

other manufacturer of explosives who used nitrocellulose as a component part of smokeless powder, blended nitrocotton, of a lower degree, to establish the desired mean; so that patent would be invalid. The main patent is that which describes a powder made of a solvent of ether alcohol and the explosive nitrocotton of 12.45 per cent nitrogen.

This patent was offered to the Du Pont Powder Company when it had no connection whatever with the International Smokeless Powder Company; and because it did not appear to them to be of value, they declined to purchase it. The patent was afterwards acquired by a third party to the International Smokeless Powder Company when the International Smokeless Powder Company became a subsidiary of the Du Pont Company, it incidentally acquired the contract for the patent. As a matter of fact, from that day to this the patent has been of some value had the Government wished to order powder under its specifications; but it so happens that they never had a powder which is covered by the patent, and regardless of its value which are extremely doubtful, it is of no value in its present position because the Government is not taking powder under it.

Mr. SMITH. In that connection may I ask you if what you say is that the specifications for the powder actually purchased by the Government do not conform to the formula of the powder patent?

Mr. HASKELL. The formula or the patent.

Mr. SMITH. In what way, aside from failing to conform to the formula, do they depart from the patent?

Mr. HASKELL. The patent has been described in some of the reports, and is an extremely broad one.

Mr. GRAFF. What patent do you refer to?

Mr. HASKELL. The Bernadou-Converse patent. The patent describes a powder which is made of ether and alcohol and nitrocellulose, of a percentage of nitrogen 12.45 per cent.

At this point it might be well to state what the company's position has been in the past regarding the Government manufacture of powder. Immediately after the war of 1898 the Navy, after an appropriation, I think, of \$125,000 was made, started to build a powder plant. They at once turned to us for assistance and information. Our position at that time was that any assistance that we could render them we were only too glad to furnish. We furnished plans and blueprints and threw open our works, so that the naval office in charge of the construction at Indian Head had every facility to examine the plant and to save considerable sums of money for the Government.

A year and a half ago, before Congress made an appropriation for an army smokeless-powder plant, General Crozier, Chief of the Ordnance Department, approached us and wanted to know our position would be in regard to a small experimental plant of the kind in case he should advocate it and it should be decided upon. At that time we told him that every facility we possessed was at his disposal. As soon as the appropriation was made at the last session of Congress he again approached us and said that we, by our attitude, made it comparatively easy or difficult for him to carry on the building of this plant. We repeated the assurances that we had given him before. We have furnished him with blueprints and plans of buildings, and have given him every facility to build the Government plant.

Criticism has been made of the price the Du Pont Company and the other companies controlled by it charge the Government.

Mr. SMITH. I do not wish to interrupt you if it embarrasses you, but at this point—as you have passed over the patents—I would like to say that you have spoken of the fact that the powder actually furnished the Government is not prepared according to formula or otherwise conforming to the patents of Bernadou and Converse. Is it covered by other patents that are held by your company or subsidiary companies?

Mr. HASKELL. It is not covered by any main patent. There were some patents or processes, and machinery connected with processes, which are the property of the company, the inventions of our employees at our own works, or inventions by others not connected with the Navy. It is only fair to state that the so-called nitrocellulose powder, regarding which statements have been made here and in the public press as being originally an invention of the United States, is a powder which is practically similar to that used many years before it was taken up by the United States Government in Russia and France, and is practically the invention of the Russian chemist Mendeleejef, and improved by the French chemist Vieulle.

Mr. SMITH. About how many patents does your company hold, if you can tell me from memory, that would be useful to a competitor of yours producing a powder according to the formula prescribed by the Navy and War Departments?

Mr. HASKELL. I am unable to answer that offhand. I should say that they could be manufactured. It is merely a question of economy of manufacture, because the patents on appliances, which while not absolutely necessary, might and probably do conduce toward economy in production.

Mr. KEIFER. When you speak of patents you speak of live patents, I suppose?

Mr. HASKELL. Certainly.

Mr. SMITH. Is the formula of the Army or the War Department and the formula of the Navy Department the same for smokeless powder for heavy ordnance?

Mr. HASKELL. Last summer, or some months ago, a joint board was appointed by the two ordnance departments, for the purpose of investigating the powder subject and adopting common specifications, but I think I am correct in stating that both departments manufacture under practically identical specifications.

Mr. SMITH. That has not been so excepting since last summer?

Mr. HASKELL. The first contracts were let under that. The variation of nitrogen allowed by the Navy is from 12.55 per cent to 12.75 per cent, and the variation of the Army is practically identical.

Mr. BUCKNER. But they have made them the same now.

Mr. HASKELL. There is no difference.

Mr. SMITH. I asked whether they were the same, or recently made the same.

Mr. HASKELL. They were not the same before, but were nearly the same; but it had no effect—

Mr. SMITH. Either as to machinery or processes?

Mr. HASKELL. No.

Mr. SMITH. I will ask you to state in a general way what the difference is between the smokeless powder used for heavy artillery, sea-

coast guns, and heavy guns on the naval vessels, and the smokeless powder used by mobile artillery for the small guns of the service, including in this question also that which is used for small arms.

Mr. HASKELL. Nitrocellulose powders are used for nearly all of the cannon purposes. They contain no nitroglycerin. I would like to state further that all cannon powder of the Navy is made on the nitrocellulose formula. The Army have used, and still have on hand enough to use, if it were necessary in time of war and desirable—because it is quicker of manufacture—field gun powder made on double base, nitroglycerin and nitrocellulose.

Mr. SMITH. I am asking you what they are actually buying now for the Field Artillery. Is it on the same formula as the powder that is bought for the Navy and for the seacoast cannon?

Mr. HASKELL. It is the same.

Mr. SMITH. What is the fact as to the formula? I am not now speaking of the size of the grains, but as to the formula for the small arms.

Mr. HASKELL. The small-arms powder is a powder made of 30 per cent nitroglycerin, other unimportant ingredients aggregating 3 or 4 per cent, and the balance nitrocellulose.

Mr. SMITH. So it is not the same formula as that used for the field artillery, seacoast guns, or the guns of the Navy.

Mr. HASKELL. It is different.

Mr. SMITH. Are there separate patents affecting the process or mode of production used on the small-arms ammunition that are not used on that for the heavy guns, or vice versa?

Mr. HASKELL. There are.

Mr. GRAFF. I would like to ask whether these different formulas which are given to you by the Navy and War Departments, respectively, are made up by the officers of those two Departments upon their own judgment, or are made up as a result of conference between you and the officers of the Army and Navy?

Mr. HASKELL. Regarding the cannon powder, the specifications have been adopted after a consultation between the practical men of our company and a board appointed by the Army and Navy for the purpose of agreeing upon a satisfactory and practicable formula in the specifications.

Regarding the small-arms powder, that is the invention of the chemist at our own works, and was a result of selection after the elimination of perhaps six or eight different kinds of smokeless powders, and found eventually to be the most satisfactory in that it produced the best ballistic results with the least erosive effects.

Mr. KEIFER. Were there tests or trials made by the Army and Navy, or one or the other of them, before they reached the conclusion?

Mr. HASKELL. Regarding the cannon powder, each Department has carried on very extended tests. The powder company only possesses small pieces, up to 5-inch guns, by means of which they can carry on tests. But in regard to the small-arms powder, that was practically perfected by tests made at our own plant, and afterwards adopted after very careful tests by the Ordnance Department of the Army.

Mr. SMITH. Is the small-arms ammunition of the Army and Navy the same?

Mr. HASKELL. The Army at the Frankford Arsenal manufactures .30-caliber ammunition. The undesirability of having two calibers was demonstrated during the Spanish-American war, and from that time on the Navy adopted the Army caliber in order that they might draw ammunition from it.

Mr. SMITH. I did not mean that. I want to know whether the formula for the powder used in the small-arms ammunition is the same in the Army and Navy?

Mr. HASKELL. It is the same.

Mr. SMITH. You spoke of the discoveries of a Russian chemist and a French chemist. Is that the origin of smokeless powder, as you understand it?

Mr. HASKELL. It is the origin of that particular smokeless powder.

Mr. SMITH. That is what I wanted to make clear. How long has smokeless powder, so far as you know, existed in the world?

Mr. HASKELL. In 1840 it was discovered that cellulose or cotton could be treated with acids in such a way as to form an explosive compound, but the earlier results were somewhat unsatisfactory, and practically little or no smokeless powder was used until the early eighties.

Mr. SMITH. What was the discovery that made it a practical thing to use smokeless powder?

Mr. HASKELL. The discovery was the fact that colloided powder, which is made up in the form of a paste and pressed through a die of varied shapes, then dried, could be consumed practically at will as regards time. The old-fashioned black powder, which exerted very much greater breech pressures, burned long before the projectile left the muzzle of the gun. Smokeless powder is designed so that only a portion of the gases have been ignited at the time the projectile leaves the breech of the gun. By that means they are enabled to start combustion and generate a comparatively small amount of gas when the projectile is near the breech. As the open cubic contents of the gun become greater through the travel of the shot, the powder burns progressively, and so exerts less strain on the breech of the gun, enabling us to get a very much higher velocity and lower trajectory with the same amount of breech pressure.

Mr. SMITH. The discovery of 1840 was the discovery of what is commonly known as gun cotton.

Mr. HASKELL. Yes, sir.

Mr. SMITH. Gun cotton is the base of all smokeless powder, is it not?

Mr. HASKELL. Practically all smokeless powder contains gun cotton, either as a base, or one of two or more explosive bases.

Mr. SMITH. Isn't it true that practically all smokeless powder consists chiefly of gun cotton and ether and alcohol chemically united?

Mr. HASKELL. That is only so with the nitrocellulose powder. The small-arms powder contains 30 per cent of nitroglycerin and 70 per cent, or nearly so, of gun cotton. The English cordite, which was used until two years ago, when the extremely erosive effects were apparent, consisted of 57 per cent nitroglycerin, 3 or 4 per cent of vaseline or jelly, and the balance gun cotton. They found that the very high percentage of nitroglycerin, which is an extremely hot explosive, caused so much erosion of the piece that they had to modify the amount of nitroglycerin and increase the amount of gun cotton.

Mr. SMITH. So that the modern tendency has been in the direction

to reduce the quantity of nitroglycerine and increase the percentage of gun cotton?

Mr. HASKELL. That is correct.

Mr. GRAFF. In what year did the United States first commence to use smokeless powder?

Mr. HASKELL. The first large orders for smokeless powder placed by the United States were given in 1897, the year prior to the Spanish-American war, when a contract for 100,000 pounds was let to the Du Pont Company by the Navy.

Mr. GRAFF. Was that the first time they commenced to use smokeless powder, except in an experimental way?

Mr. HASKELL. Yes.

Mr. GRAFF. That, of course, has occurred since the issuance of the Converse and Bernadou patents?

Mr. HASKELL. We manufactured powder on a nitro cellulose base before Bernadou and Converse patents were applied for or issued, I am quite sure.

Mr. SMITH. That suggests another inquiry. Do you furnish the powder used in the manufacture of ammunition for small arms?

Mr. HASKELL. We do. Criticism has been made of the price charged the Government for the powder furnished. Statements have been rendered which would tend to convey the impression that there is over 100 per cent profit in the business. Before discussing the prices *seriatim*, I should like to speak of some of the attendant difficulties surrounding the manufacture of powder.

In the first place, during the last ten or fifteen years the Government has changed its ideas as to what it wanted two or three times. Some of the changes have practically rendered obsolete the plant and apparatus needed for making powder. It is a dangerous fabrication, it is liable to loss through explosion, and the very long time required to dry the present powders to pass the required tests, and to secure the orders for shipment necessitates an average time of the powder on hand at the mill, after it is pressed, of nearly six months. Six months would be a fair average. The danger of fire, because of the large quantities of powder necessitated by this long time of holding on our plants, is very great. At times we have had from \$2,000,000 to \$2,500,000 worth of powder in our dry houses.

Mr. SMITH. Government powder?

Mr. HASKELL. Government powder awaiting shipment, on which there can be no insurance, and upon which a loss of hundreds of thousands of dollars may occur. We have had losses of upward of \$50,000. The danger of rejection is also very great. The Government officials, as they find improvement can be made, are apt to narrow in the limits within which variations shall be allowed before acceptance, so as to get the best possible practice; and we have had at times large amounts of powder rejected that were practically valueless.

Mr. SMITH. "Large" is very indefinite. Can you give us an idea in actual cost to you of that which has been rejected all told since 1897, when you say this work first commenced?

Mr. HASKELL. That would be a guess on my part.

Mr. SMITH. Do you realize that "large" is a very indefinite word?

Mr. HASKELL. It has not been unduly severe during the past year. We had very near 300,000 pounds rejected which is still on hand.

Mr. GRAFF. You do not mean that that it is utterly useless?

Mr. HASKELL. So far as we can see it is. It can be returned to a condition of gun cotton at considerable expense and one which very nearly eats up all the value of reworking.

Another expense which is to be counted upon by us is the additional expenditures of capital required by new specifications. We have had stoppages at our plants of from three weeks to ninety days, where the fabrication actually had to stop because of a change in the specifications required by the Government after the contracts were given for powder.

Mr. SMITH. Where the Government changes the formula after the contract, are you in anyway compensated for any change, or is the right reserved in the contract to change?

Mr. HASKELL. In some cases the contracts are so indefinite that it rests largely within the scope of the judgment of the inspecting officer as to what he shall require. And in some cases a discovery has been made of an improvement, which the Government has sought—and very properly—to apply to the contract as yet partly filled.

Mr. SMITH. Have you ever been compensated for any of those classes of losses?

Mr. HASKELL. Never, so far as I know.

Mr. SMITH. Do you mean, then, that you have recognized the right of the Government where a new discovery was made after the contract was let to change the specifications and formula and make a new powder without compensation?

Mr. HASKELL. That is correct.

Mr. BUCKNER. In our desire to please the Government we have done it.

Mr. HASKELL. I would mention one instance as a sample. Ever since 1897 powder has been manufactured in the Du Pont Carney's Point works on the Delaware River, the water supply being the river, which is almost always fresh at that point and usable. I say fresh, but I mean comparatively fresh. Recently the opinion was expressed by a naval officer that more than one grain of salt to the gallon was undesirable in the manufacture of smokeless powder. My orders were that no more smokeless powder should be made until that condition was reached. As a matter of fact the powder had been made, accepted, and found satisfactory during the years the plant had been operated when the minimum amount of salt was six grains to the gallon. In order to bring about this condition at this one plant we have gone to the expense of \$125,000 to bring water from a pond some two or three miles back of the plant.

Criticism has been made of the companies because of the fact that several bids had been made at the same price. Just as soon as the consolidation which forms the present Du Pont Company took place, and the International Smokeless Powder Company was bought, in order to avoid just criticism because of any apparent competition, instructions were given that each company should place the negotiations of its powder business in the hands of one man so far as the departments were concerned, and Mr. E. G. Buckner was appointed the representative of the several companies in order that criticism might be avoided of an apparent competition which was not real. We had put in bids by the same companies at the same price for the amount of powder that we desired to go to plants of the several companies in order that the usual course of procedure in inspection might be expe-

dited; and it has been at the request of the departments that it should be handled in that way. We are now about to bid in the name of the Du Pont Company on any powder that will be sold hereafter in the name of the Du Pont Company for the Laffin & Rand and the California plants. The International Smokeless Powder Company will still continue to make its own contracts and sell its own powder, because there is still outstanding a minority interest in that concern.

Regarding the propriety of the price charged I will say that recently an investigation was made by the joint board of the Army and Navy of the sales of smokeless powder to the Government and others, and we presented to them our statement, as well as accounts, which tended to show that we received 11 cents a pound more from the next favored customer than we charged the Government, the only exception being where the loading companies have contracts for Government ammunition we furnish the powder which is to be inspected by the Government at the same price we charge the Government.

Mr. SMITH. By loading companies you mean the manufacturers of the projectiles?

Mr. HASKELL. Of the small-arms ammunition—the Union Metallic Cartridge Company and the Winchester Repeating Arms Company.

I have had prepared very carefully a statement of the cost of cannon powders under the present conditions of purchase, based upon the operations of the first eleven months of 1906, and covering a production of 13,650,000 pounds of cannon powder, including the cost of the alcohol, which is now purchased by the powder company. The cost is 43.71 cents per pound. The freight is 0.6 of a cent. The selling and administrative expense chargeable to that branch of our business was 2.7 cents, making a total delivered cost of 47.01 cents. I have also tried to ascertain as carefully as possible the return in profit at those prices. At the present price of 69 cents, it yields to the company on the investment in that department of our business a profit of 17.10 per cent on the amount of capital invested in the plants, raw material, manufactured products, and the average Government outstanding account.

Mr. SMITH. But your raw material is not invested for the year, is it?

Mr. HASKELL. That is the average. When I say "invested," it means the average inventory of raw material that we have on hand.

Mr. SMITH. And it has nothing to do with the amount consumed.

Mr. HASKELL. No.

Mr. GRAFF. You include the cost of your plant, do you?

Mr. HASKELL. We include the cost of all of that portion of the plant that is used in the manufacture of Government powder.

Mr. KEIFER. Do you mean the cost of the plant absolutely, or interest on the amount of the cost of the plant?

Mr. HASKELL. To establish this figure we took a certain capital sum, made up of the cost of the plant, the cost of the average stock of raw materials, of the average stock of manufactured products, and of the average outstanding accounts.

Mr. GRAFF. When you figured the cost of the plant, how did you arrive at that portion of the plant? Did you figure the amount paid for the plant to someone else, or what it would cost to put that up at that price?

Mr. HASKELL. We inventoried our plants at what it would cost at the time the inventory is made to put up a plant of that kind there.

Mr. SMITH. I believe it is only a matter of computation, but you did not state the number of cents per pound average gross profit.

Mr. HASKELL. I did not state that because—

Mr. SMITH. It is a mere matter of computation. Have you got it there?

Mr. HASKELL. Yes; it figures out 21.99 cents per pound. Referring to the matter of profit on the capital in the smokeless powder part of our business, which, as I say, figures out 17.10 per cent, I find that 75 per cent of the business done by the company in its mercantile lines of explosives under highly competitive conditions yielded a profit in excess of that we derive from the Government business.

Mr. SMITH. In your estimate of 17.10 per cent of gross profit, how much do you count as the value of the plant and stock?

Mr. HASKELL. The value of that part of our capital which is invested in Government business varies according to the amount of business we are doing, and runs from about \$4,800,000 to \$7,500,000.

Passing on to certain statements which have been made to Congress and to the public, I would wish to refer to the so-called charge of treason against the company. There is cited, in a pamphlet recently presented, a letter written by Mr. Watts, president of the International Smokeless Powder Company, who died some two years ago—and, if he were here could probably give a perfectly clear explanation of the letter written—to a foreign officer offering to present United States Government methods of the manufacture and so forth of smokeless powder. I do not feel that the Du Pont Company is concerned with that particular question for the reason that that letter was written several years before we owned any interest in the International Smokeless Powder Company, and certainly no criticism should attach to us for the action, even if it is criticisable, of a man who was not at the time connected with our company.

We are also criticised because of information given to other Governments, and the fact that we are building a smokeless-powder plant for Brazil. Before any steps were taken to enter into a contract with Brazil representations were made to the Departments in Washington interested, and objections were asked, if they had any, to be urged against our doing it. We were advised that provided we did not give the processes of the Government itself, they could and did urge no objections to that course of procedure.

Connected with the matter of treatment of the Government, regarding information given to other Governments, it would seem proper for me to speak of an incident which has recently occurred where a discovery was believed to have been made, and we have as yet no reason to change our views, of a very valuable discovery.

When this powder was presented in its experimental stage—and it is still in an experimental stage, although it is very much further ahead than it was—the request was made by the chiefs of the two bureaus of ordnance that that should not be given to foreign countries. We owned United States patents on this new invention at the time under a contract which had been made some years before with the inventor. We did not, however, own foreign patents, and the inventor was at liberty to present it, and undoubtedly would have presented it, to European governments if steps had not been taken to safeguard them.

Mr. SMITH. At that point, how is it possible to patent an article and still maintain it a secret?

Mr. HASKELL. I want to correct my testimony and say a secret process instead of a patent. We own the invention, and if we choose to patent it we own the patent.

At the request of the Government we took up with this inventor, and we paid him \$120,000 to control the European patents on this article in order to prevent its going to European governments. There could be no return to us from that, because it is only done for the purpose of stopping its use. I simply mention that as an indication of the attitude of the powder company.

Mr. SMITH. Was this inventor connected with the Government in any way as employee or officer?

Mr. HASKELL. Not at all.

Criticism has been made of the apparent state of helplessness of the Government because of the fact that at present, outside of its own manufactory, there is no fabrication of smokeless powder excepting by the Du Pont Company and those concerns owned by it. The Du Pont Company started its business in 1802.

The sole supply of powder for the war of 1812 was furnished by the Du Pont Company. We have to-day in existence a plant which was built at the request of President Madison to supply powder on the northern frontier. In the war of 1848 the entire supply of the Government was derived from the Du Pont Powder Company. From 1861 to 1865 the Du Pont Company, the Laflin & Rand Powder Company, and the Hazard Powder Company—the last controlled by the Du Pont Company—furnished the entire supply of powder, and occupied a singularly confidential relationship with the Government. In 1898 the only powders furnished to the Government by concerns in this country were furnished by the Du Pont Company, the California Powder Works, now merged with the Du Pont Company, and the Laflin & Rand Powder Company.

At the beginning of the war, the Government found itself practically without powder on hand. Neither Department had decided exactly the kind of powder it wanted to lay in large stocks of. The plant did not exist. And when the board of inquiry on the *Maine* disaster decided that war was imminent, the chiefs of the two Bureaus of Ordnance called upon the powder companies to do their utmost to prepare for hostilities which were coming within two or three months. All three concerns went to work under extraordinary expense because of the necessity, and increased their plants to the utmost. The Du Pont Company and the California Powder Works were given contracts for brown prismatic powder as soon as it became apparent that there was not smokeless powder enough to supply the needs. We were induced to put in machinery for its fabrication, which upon the conclusion of the war in July, 1898, was rendered valueless, and all existing contracts that were on the books of the powder companies were canceled without compensation, because the Government knew then that it must have smokeless powder and did not want to order any more brown prismatic powder.

Absolutely no compensation was made to the company for ceasing to deliver under existing contracts. I think you will find, if you cause inquiry to be made at the Departments, that alone of all the contractors that were called upon to furnish military supplies the powder companies furnished powder to the Government at the same prices as formerly, or less than formerly. I might give an instance, that of

saddles, which could be and had been fabricated at the arsenal at a cost of \$8 apiece, and had been purchased by the Government prior to the war at \$13 apiece, but were charged at the rate of \$23 apiece because they had to have them. I speak of this because on the floor of Congress fear was expressed that under the present conditions advantage would be taken of the fact that the only competitor the Du Pont Company has at the present time is Government plants, and the Government should protect itself against possible holding up on the part of the Du Pont Company. I think we can point to our record of the past to relieve us of any imputation of that kind.

I am reminded that practically the same conditions occurred in the civil war, from 1861 to 1865, and that lower prices were charged than had been gotten for the same goods previously.

In closing, for I do not want to take up the time of you gentlemen unnecessarily, I would like to speak of the advantage to the Government in possessing as an auxiliary concern for military supplies a concern like the Du Pont Company. In case of necessary rapid extension of the production of smokeless powder it is very difficult to get machinery manufactured quickly, to get the necessary expert and engineer talent to design and supervise the additions to the plants.

The Du Pont Company has its own shops and a very large engineering force. It has parts of plants—I refer particularly to its acid plants—used for mercantile purposes, which could be used to augment the production of Government smokeless powder in time of war. The company also maintains at an expense of several hundred thousand dollars a year two large experimental laboratories where work is being carried on constantly. The larger part of the work being done on military powders, and a great deal of the credit of the improvement of existing smokeless powders, as well as many original inventions, are only the just due of the Du Pont Company.

I would like to say that at present the business being given to the powder companies is only a third to a half of what the works are capable of doing if pressed to the full capacity. And from that point of view it seems that we certainly are entitled to a fair profit, and we do not want an unfair one.

Mr. SMITH. There is one remark which you made, and I think after reconsideration it will appear that you did not wish to reflect upon him, but it might be interpreted hereafter as reflecting upon General Crozier, and I do not think you intended to do that. Consequently, I wish to give you an opportunity to modify it. You suggested that General Crozier consulted you as to what your attitude would be toward the Government establishing an independent army powder plant. By that, did you mean to intimate that General Crozier was in any way asking your consent?

Mr. HASKELL. Merely as regards the furnishing to the Government of the plans and specifications of our machinery and the use of such processes as he might desire to utilize.

Mr. SMITH. Did you mean to intimate that he in any sense asked your consent or approval of his intention to build a Government powder plant?

Mr. HASKELL. Not at all.

Mr. KEIFER. He asked your cooperation.

Mr. HASKELL. That is entirely correct.

Mr. SMITH. Now, you spoke of the danger incident to the powder business. Is it not a fact that the manufacture of smokeless powder is the least dangerous of the manufacture of any high explosive?

Mr. HASKELL. Some kinds of smokeless powders are less dangerous than others.

Mr. SMITH. Is not smokeless powder less dangerous, in its manufacture, to buildings and to everything else, than black powder or giant powder or any other known form of explosive?

Mr. HASKELL. That is so as regards single base powders, not of powders containing nitro glycerin as component parts of the formula.

Mr. SMITH. Is it not a fact that the actual production of smokeless powder is largely under water, thereby avoiding many of the perils of explosion incident to ordinary powders?

Mr. HASKELL. By "under water" I presume you mean the fact that the gun cotton forming the component part of the powder is never dry. That is correct, because we use wet gun cotton which is dehydrated—that is, the water is replaced by alcohol. As soon as it ceases to be saturated with water it becomes saturated with alcohol.

Mr. SMITH. And therefore less explosive?

Mr. HASKELL. It is not liable to spontaneous combustion to the same extent as the nitroglycerin base powder.

Mr. SMITH. Will the gun cotton, either wet with water or with alcohol, be as apt to explode even from direct contact with fire as would ordinary powder in the process of manufacture?

Mr. HASKELL. I should say not.

Mr. SMITH. It is a fact, is it not, that in the manufacture of powders from gun cotton constantly kept wet with either water or alcohol that the chief danger is from fire rather than explosion?

Mr. HASKELL. That is so as regards single-base powders.

Mr. SMITH. Do I understand that the cannon powder is a single-base powder?

Mr. HASKELL. You are quite correct.

Mr. SMITH. And the small arms powder is not?

Mr. HASKELL. Yes.

Mr. SMITH. So that possibly in estimating the profits which a company would be entitled to, when you come to consider the damage to buildings, destruction of plants, and injury to employees, the profit might be somewhat less upon a single-base powder than upon other forms of high explosives, in justice, might it not?

Mr. HASKELL. I should think so. I am reminded by Colonel Buckner of one danger in the recovery of the solvent, which is a necessary part of fabrication, because we have to replace the full amount of alcohol used.

Mr. SMITH. I suppose you will pardon many questions that the committee asks you in ignorance of the manufacture of powder?

Mr. HASKELL. We are here to give you any information we can.

Mr. SMITH. Now, I would like to know, if it meets with your approval—we have no right to compel you to answer, and would not want to—but I would like to interrogate you somewhat as to your company, and you may answer so far as you are willing to divulge the information here.

As a matter of fact, every company in the United States that was ever engaged in the manufacture of any form of smokeless powder has

now been, in some form, amalgamated with the Du Pont Company, has it not?

Mr. HASKELL. No; there are several unimportant manufacturers of sporting smokeless powder.

Mr. SMITH. No company that has ever engaged in the manufacture of smokeless powder for cannon or heavy guns is now independent in this country, is it?

Mr. HASKELL. That is quite correct.

Mr. SMITH. How many companies have ever engaged in the manufacture or production of smokeless powder in the United States in the years since the Government has been buying it—1897?

Mr. HASKELL. Four companies, practically. The Laflin and Rand Powder Company was the successor, in the smokeless powder business, of the American Smokeless Powder Company.

Mr. SMITH. Who was first in the business in the United States?

Mr. HASKELL. In the manufacture of smokeless powder?

Mr. SMITH. I refer not to the sportsman's powder.

Mr. HASKELL. The Du Pont Company.

Mr. SMITH. Who next?

Mr. HASKELL. The California Powder Works.

Mr. SMITH. Was the California works, at its inception, wholly an independent company?

Mr. HASKELL. For upward of twenty years—certainly before the matter of smokeless powder came up—the Du Pont Company has been the largest stockholder in the California Powder Works.

Mr. SMITH. But not the controlling stockholder?

Mr. HASKELL. No.

Mr. SMITH. What was the next company to engage in manufacturing smokeless powder after the California company?

Mr. HASKELL. The Laflin & Rand Powder Company.

Mr. SMITH. Was that wholly independent of the Du Pont Company?

Mr. HASKELL. Yes; some of the Du Pont family owned a few shares of the stock.

Mr. SMITH. But the controlling interest was not in the Du Pont Company?

Mr. HASKELL. No.

Mr. SMITH. What was the next company?

Mr. HASKELL. The International Smokeless Powder Company.

Mr. SMITH. Was that a separate company, or consolidated?

Mr. HASKELL. That was a separate concern.

Mr. SMITH. Were the Du Ponts interested in that?

Mr. HASKELL. Not before its purchase.

Mr. SMITH. Had no interest in it at all?

Mr. HASKELL. Not at all.

Mr. SMITH. Were there any others of any importance?

Mr. HASKELL. No. There were contracts let by the Government to three small powder manufacturers during the Spanish-American war, but they never manufactured any powder.

Mr. SMITH. Now, when and how was the California company practically merged into the Du Pont Company, and control of the stock acquired?

Mr. HASKELL. I think I am correct in saying two years ago.

Mr. SMITH. By the Du Pont Company or by the Du Ponts as individuals?

Mr. HASKELL. By the E. I. Du Pont de Nemours Powder Company.

Mr. SMITH. Has any change in the relation of that company to the Du Pont Company taken place subsequent to that?

Mr. HASKELL. Do you mean the California Powder Works?

Mr. SMITH. Yes.

Mr. HASKELL. The California Powder Works was dissolved. It is being dissolved now. The necessary order of court has been decreed, and its profits and assets are in process of division, all of the stock being owned by the Du Pont Company—all but a few shares.

Mr. SMITH. When and how did the Du Pont Company obtain control of the Laffin & Rand Company?

Mr. HASKELL. In 1902 they purchased the stock of the Laffin & Rand Company.

Mr. SMITH. All of it?

Mr. HASKELL. They purchased, I think, in the neighborhood of 60 or 70 per cent.

Mr. SMITH. Who so purchased it?

Mr. HASKELL. The stock was purchased by the Delaware Securities Company.

Mr. SMITH. The Delaware Securities Company was a company organized as a holding company, was it not, by the Du Ponts? When and how did the Du Pont Company obtain control of the International Smokeless Powder Company?

Mr. HASKELL. In the fall of 1903 and winter of 1903 and 1904.

Mr. SMITH. How was that done?

Mr. HASKELL. That was purchased by the formation of a holding company called The Du Pont International Smokeless Powder Company.

Mr. SMITH. So that the holding company for the Laffin & Rand Company and the holding company for the International Smokeless Powder Company was not the same.

Mr. HASKELL. Not the same at all.

Mr. SMITH. Is the stock held by the holding company?

Mr. HASKELL. It is—a portion of it is held.

Mr. SMITH. A controlling interest?

Mr. HASKELL. A controlling interest in it.

Mr. SMITH. What holding company?

Mr. HASKELL. The E. I. Du Pont de Nemours Powder Company.

Mr. SMITH. So that, as I understand you, the stock of the California Company is, in a sense, to be annihilated; that is, a dividend is being declared to the stockholders of all its assets, and it has ceased to exist.

Mr. HASKELL. Yes.

Mr. SMITH. The other three powder companies which have a legal existence, and are separate corporations, are in such a situation that the majority of the stock in each is held by the holding company.

Mr. HASKELL. I think practically all of the stock of the Laffin & Rand Company is held; and as soon as necessary legal arrangements can be made, that will be dissolved.

Mr. SMITH. Is it the purpose, so far as you may know it, that these holding companies shall simply hold temporarily until the dissolution of the companies and the union of all in one company?

Mr. HASKELL. That is the idea.

Mr. SMITH. During the time that these four companies did exist, and I understand you that they did exist separately at one time from the date you have given——

Mr. HASKELL. Yes.

Mr. SMITH. There was a time when there were four independent companies engaged in the manufacture of smokeless powder. Were they all engaged in the manufacture of smokeless powder for the Government, according to its formula and specifications?

Mr. HASKELL. Yes, sir.

Mr. SMITH. At the time that they were independent, how was this question of patents upon processes and matters of manufacture settled or disposed of?

Mr. HASKELL. At the time the so-called Bernadou and Converse patents were purchased by the International Smokeless Powder Company, the Du Pont Company, the California Company, and the Laffin & Rand Powder Company were all manufacturing under the same specifications. Each concern consulted its attorney, and were advised either that the patents were inoperative through not being novel, or that they did not cover the particular powder the company was using, so that they ignored the patent owned by the International Powder Company.

Mr. SMITH. Was any effort ever made to enforce these patents as against these companies?

Mr. HASKELL. Never.

Mr. SMITH. You say, as I understand you, that you now disclaim that the Bernadou and Converse patents would in any way interfere with the production of powder according to the Government formula by any independent producer of smokeless powder?

Mr. HASKELL. That is my opinion.

Mr. SMITH. Has your company ever contended otherwise?

Mr. HASKELL. Not that I am aware of.

Mr. SMITH. You say, however, that there are a number. Can you give the exact number of patents upon processes or methods of manufacture that are utilized by your company; and were any of these processes or methods of manufacture utilized by these other companies when they were manufacturing smokeless powder?

Mr. HASKELL. The relationship between the Du Pont Company and the California Company was very intimate owing to a very large interest in the California Powder Works, and whatever patents they owned were exchanged and used between the two companies. There was no exchange of patents, so far as I know, or no utilization of patents by other companies than those two.

Mr. SMITH. That is, if one company held a patent upon an article or process of manufacture, it licensed the other one to utilize that patent.

Mr. HASKELL. Simply permitted them to do it in the case of two companies.

Mr. SMITH. Do you know whether the Laffin & Rand Company and the International Smokeless Powder Company used any of the methods of manufacture or production that you have referred to as covered by patents?

Mr. HASKELL. I do not think they did.

Mr. SMITH. Were they able to compete with you at that time in bidding on Government contracts without those processes?

Mr. HASKELL. At that time I was president of the Laffin & Rand Company.

Mr. SMITH. So much the more you would be able to tell us about that.

Mr. HASKELL. No difficulty whatever in competing with the Du Pont Company. We found a great deal of difficulty in manufacturing powder to suit the Government. The difficulties were on questions of patents and processes.

Mr. SMITH. Is it a fact, Mr. Haskell, that at any time in recent years there has been an international agreement among powder manufacturers as to prices at which smokeless powder should be furnished to this or any other Government?

Mr. HASKELL. There was a contract some years ago.

Mr. SMITH. How many years ago?

Mr. HASKELL. It was made in 1897, and it was canceled about a year ago.

Mr. SMITH. So that you state that since a year ago the smokeless powder factories of the world are independent of one another.

Mr. HASKELL. That is true, sir.

Mr. SMITH. Is there anything, then, in any agreement, express or implied, that will prevent any foreign manufacturer of powder underbidding you for the contract of the Government of the United States?

Mr. HASKELL. Absolutely nothing.

Mr. SMITH. How did that arrangement come to be dissolved?

Mr. HASKELL. Our attorneys advised us that it was illegal, and we dissolved it. The policy of the Du Pont Company has been, since its organization, to comply with the spirit and the letter of the law, and at the time of the organization there were many trade agreements; and as fast as they could be, in good faith and due diligence, done away with, they have been swept away.

Mr. SMITH. In the year that has intervened, have you ever bid against them in Europe, or have they ever bid against you in America?

Mr. HASKELL. No.

Mr. SMITH. How do you account for that if there was not even an implied understanding that you would not bid against each other?

Mr. HASKELL. It is not practical to do business with any European government. Each government finds it to its own interest to foster to a great extent its own domestic manufactures, and a foreign competitor practically stands no chance.

Mr. SMITH. How do you account for the fact that they never compete with you or against you?

Mr. KEIFER. They can not compete with you, I suppose?

Mr. HASKELL. They can not compete easily.

Mr. SMITH. There is nothing to prevent their furnishing the powder, is there?

Mr. HASKELL. I understand that some of the foreign factories are treating with the Ordnance Department of the Army now, on some arms powder.

Mr. KEIFER. Is it not against the policy of this Government, and all others, so far as you know, to make contracts for powders and such material supplies for the Army and the Navy at all, excepting with their own people?

Mr. HASKELL. I think that is practically the policy of all governments which have smokeless powder plants within their own borders.

The French Government manufactures its own powder, and has a complete monopoly of all the manufacture of all kinds of powder, for both sporting and military purposes.

Mr. KEIFER. In the case of war, every government wants to have control over the manufacture of powder and materials of war of every kind.

Mr. HASKELL. Yes.

Mr. SMITH. If that is the case, I wish you would tell us the purpose of the international agreement made in 1897.

Mr. HASKELL. The international agreement was made in 1897 for the purpose of working in harmony with the people on the other side.

Mr. SMITH. As soon as you had absolutely no competition, it was impracticable, as you now contend, for you to bid in Europe, or for them to bid here. What could there be in the way of harmony or lack of harmony as between you and them?

Mr. HASKELL. We have considered and we still consider that there is some value to be attached to the exchange of patented processes, of inventions, and I do not see that there is any objection to that.

Mr. SMITH. But your international agreement was not in reference to that, at least not confined to that.

Mr. HASKELL. Certainly not.

Mr. SMITH. Your agreement was with reference to competing on powder, was it not?

Mr. HASKELL. Yes; I suppose it was.

Mr. SMITH. Now, I ask you again if you insist that it was utterly impracticable for European manufacturers to compete with you, or utterly impracticable for you to compete with them, why these powder manufacturers took the pains to enter into an international agreement upon that subject?

Mr. HASKELL. The initiation of the agreement, as it pertains to smokeless powder, came from the other side. We did not, until at the time it was made, regard our part of it. They wanted it because they thought that we would compete with them at the time. Until the use of free alcohol it was practically impossible for anybody to compete with European governments in the manufacture of powder, because the duty on the alcohol would have been 50 cents a pound on powder, so there was no chance of our doing anything.

Mr. SMITH. Still the more I am unable to understand you. The whole incentive, if any, so far as I can see, would have been upon your side. They might compete with you, possibly, but you say it was impossible for you to compete with them?

Mr. HASKELL. On nitrocellulose powder. On other powders we could compete. We have made prices at times, but never succeeded in getting business.

Mr. SMITH. You can not give us any further reason why you would make an international agreement when competition was practically impossible?

Mr. HASKELL. They wanted to introduce that feature of the thing on the other side. We did not want it. In some cases the prices on smokeless powder are higher than ours, in other cases they are lower.

Mr. SMITH. To what extent did this international agreement with reference to prices extend; to what classes of explosives?

Mr. HASKELL. It practically extended to all classes excepting blasting powder, as I recollect it. I have not seen the contract for some time.

Mr. SMITH. Who ratified the agreement in behalf of the Du Pont Company?

Mr. HASKELL. Mr. Eugene Du Pont, who was then a member of the firm of E. I. Du Pont de Nemours and Company.

Mr. SMITH. Prior to this consolidation of the four companies that we have heretofore referred to, there existed a domestic powder pool in this country, did there not?

Mr. HASKELL. Not on smokeless powder.

Mr. SMITH. On other kinds of powder?

Mr. HASKELL. Yes; I think while there is no objection to going into other kinds of powder, yet I believe we had better confine this to the Government powder at this time.

Mr. SMITH. I will state very frankly that it is stated strongly to us by representatives of the thirty-four independent powder manufacturers that by reason of the profits that you obtain from the Government work you are enabled to meet practically all the fixed charges upon the Du Pont plants, and are thereby enabled the better to sell common powder at an actual loss for the purpose of destroying your competitors. Now is it not a fact that in recent times the price of black powder has been reduced in the West from far above a dollar to about 92 cents a keg?

Mr. HASKELL. The price of powder in the West prior to the consolidation of the Du Pont Company—by powder I mean black blasting powder.

Mr. SMITH. That is what I refer to also.

Mr. HASKELL. It was \$1.10 to \$1.25 a keg in the States of Illinois, Indiana, and Ohio, which may be taken as typical States. It is now sold as low as 92 cents a keg.

Mr. SMITH. It now costs more to produce than it did then, does it not?

Mr. HASKELL. I should say yes.

Mr. SMITH. Now, I can assure you, so far as these matters are concerned, that if you think you ought not to answer, you are at liberty not to do so. We are seeking information simply because of the charges against your company, and to bring them to your attention, so as to enable you to answer them if you see fit to do so.

Mr. HASKELL. Regarding the reduction of price of black powder, I would like to make this statement:

Prior to the consolidation of the Du Pont Company, the then existing standard concerns had made several very unwise purchases. Competition would come in, and plants would be built, starting with a small initial production, and growing because of the satisfactory price that a concern well located in a mining region would show, until it reached such a point that either prices had to be reduced to meet the competition, or the competitor must be absorbed. I have one case in mind, particularly, of a concern called The Indiana Powder Company, formed by a Mr. Rood, a salesman in the employ of Mr. Waddell, who organized a concern, gathering around him several consumer customers, and he sold his concern at the end of about three years at a profit of nearly \$300,000.

The Phoenix Powder Company was bought by the old line companies for several hundred thousand dollars more than it was worth. When the Du Pont Company was formed the first thing that was told us by our attorney was that price agreements must stop, and we got

out of them as fast as we could, and all of them have been swept away for some years. A careful consideration was given to the policy to be pursued with regard to competitors. It was deemed more to the interest of all concerned to try and do a large business at a comparatively small profit, and let abnormal competition be eliminated by the smaller concerns dying away when they found the business unprofitable, rather than to buy at large prices competing concerns which put a premium on others going in for the purpose of selling out. I should have said smaller or badly managed concerns.

The Du Pont Company from the time of its organization until to-day has, because of its good will and because of the fact that we had trade with people who were willing to deal with us on the merits of our goods and at better prices than any of the other competitors, and the lower prices, instead of having been made by the Du Pont Company, have been made by the competitors who had to give a lower price in order to get business from existing concerns.

Mr. SMITH. Do you say that the 92 cents you are now charging for blasting powder in the vicinity of the Mississippi River is a compensatory rate?

Mr. HASKELL. I don't think that we have on our books to-day a customer at 92 cents a keg.

Mr. SMITH. Well, I misunderstood you then; I thought you acquiesced in that. What do you say is the minimum price?

Mr. HASKELL. Our prices are higher than that. These small powder companies, Mr. Waddell's concern, and other concerns are selling at those prices.

Mr. SMITH. What is the minimum price at which you have sold black blasting powder in the Mississippi Valley within say two years past?

Mr. HASKELL. I should say down to 95 cents.

Mr. SMITH. Do you say that is a compensatory price?

Mr. HASKELL. It does not show a loss. It altogether depends as to how far from the mill the traffic is, and what it costs to get there.

Mr. SMITH. Suppose it was being charged that it was sold at 92 cents—it has been so charged. But I want to know whether 95 cents was a rate put in operation at that time for the purpose of forcing down the rate of the other producers, and was actually a compensatory rate.

Mr. HASKELL. At the time we made the 95 cent price, we had been receiving a dollar a keg, and it was only because of the large volume of traffic that was offered to our customers by other powder companies at 95 cents or less, that we made the 95-cent price.

Mr. SMITH. Do you say you had been selling at a dollar prior to that time?

Mr. HASKELL. Up to that time.

Mr. SMITH. From shortly prior to that time you had been selling at \$1.45, had you not?

Mr. HASKELL. One dollar and 10 cents was practically the price at which car-load buyers purchased in Indiana, Ohio, and Illinois.

Mr. GRAFF. Do you fix the price delivered?

Mr. HASKELL. Delivered, yes.

Mr. GRAFF. You pay the freight?

Mr. HASKELL. Yes, sir.

Mr. SMITH. Did you have a powder mill at Keokuk?

Mr. HASKELL. Yes, sir.

Mr. SMITH. It is charged that at the time—shortly before this recent cut—you were selling the powder of the Keokuk plant on the Keokuk side of the river at \$1.45, and upon the Illinois side of the river at \$1.35. Do you know whether that is true or not?

Mr. HASKELL. There was a difference between the price in the State of Iowa and the price in the State of Illinois of 10 cents a keg. The prices were, as nearly as I can recollect, \$1.25 for single carload lots in Illinois and \$1.35 for single carload lots in Iowa.

Mr. SMITH. In other words, whichever figures might be correct, \$1.25 or \$1.35 or \$1.45, the price is 10 cents more at the factory at Keokuk than across the river in Illinois.

Mr. HASKELL. An individual who chose to buy powder on the west bank of the Mississippi River, either at the Keokuk mills, or any other point of delivery, got the same price as the Illinois price. Practically there is no consumption of powder along the banks of the Mississippi River. All of the coal fields are in the interior points—Oskaloosa, Springfield, and so forth.

Mr. SMITH. But at the same distance if that powder was shipped out from Keokuk west, it was worth 10 cents more than it was if shipped the same distance east.

Mr. HASKELL. Provided it was shipped from that particular mill. But that mill was the only mill that was located on the banks of the Mississippi River at the time. There were other mills in Illinois and Wisconsin and Ohio that made common prices. The method of fixing the prices in the old days, prior to the consolidation of the Du Pont Company, and when there were meetings for the purpose of discussing matters of policy, prices, and so forth, was to establish tariffs by States, and practically providing in a certain State the same price. The States of Illinois, Ohio, and Indiana all carried the same rate. When we got west of the river the higher price was asked.

Mr. SMITH. So that it did not make any difference where a man got it from, what mill; it all brought the same price in those days?

Mr. HASKELL. It does to-day.

Mr. SMITH. But you have no pool to-day?

Mr. HASKELL. No.

Mr. SMITH. So that if a man came to a local factory it was furnished cheaper, and he has that opportunity now?

Mr. HASKELL. Certainly; but if we should ship more into Indiana we might make a lower price than we would if we shipped more in Iowa.

Mr. SMITH. You still have the country divided into districts to which the same prices apply practically; that is correct, is it?

Mr. HASKELL. It is so to a modified extent, as compared with formerly, because the prices now are practically and largely fixed, because of the mills supplying where all the traffic that a mill can supply at approximately the same price, within one or two hundred miles it takes the same price for the same kind of a customer.

Mr. SMITH. How long do you say it is since every form of pool, association, agreements, or anything of that kind existed for the fixing of prices of powder in the United States?

Mr. HASKELL. I can not remember the exact time, but about two years ago.

Mr. SMITH. How much is gun cotton worth per pound in actual cost of production without any allowances for interest on the plant? How much is the actual cost of production?

Mr. HASKELL. Do you mean by that the cost of labor and material?

Mr. SMITH. Labor and material, including superintendence and everything that goes to make up the cost of production, exclusive of payment of interest on the plant.

Mr. HASKELL. I should think from 23 to 35 cents a pound, according to the amount of product and the kind of powder.

Mr. SMITH. If army officers stated that they are producing it constantly at 17 cents would that be so far away from your own judgment that you would think they were mistaken about it?

Mr. HASKELL. I should be inclined to doubt it, although they may be.

Mr. SMITH. If the governmental experience showed that gun cotton can be produced at 17 cents, then the actual cost of smokeless powder would not be anything like equal to what you have estimated, would it?

Mr. HASKELL. I should think not.

Mr. BUCKNER. Has this committee the report that was made by the joint board on the question of prices?

Mr. SMITH. At Indian Head?

Mr. BUCKNER. Yes.

Mr. SMITH. We have had it.

Mr. HASKELL. Does that cover it, Mr. Buckner?

Mr. BUCKNER. It covers the cost of powder there.

Mr. SMITH. What do you say is the added cost of production per pound of smokeless powder for heavy guns above the cost of gun cotton per pound?

Mr. HASKELL. It would simply be a guess on my part.

Mr. SMITH. May I not aid you a little? What do you say is the cost of production on smokeless powder at your factories exclusive of superintendence, interest, and everything of that kind?

Mr. HASKELL. About 40 cents a pound outside of the alcohol.

Mr. SMITH. What including the alcohol?

Mr. HASKELL. Forty-three and seventy-one hundredths cents—the figures I gave you.

Mr. SMITH. You told me a few moments ago that gun cotton would cost up to the maximum of 35 cents, so that if the figures you gave were true, it would only be 8 cents more for smokeless powder than for gun cotton?

Mr. HASKELL. You asked me what gun cotton cost, but not any particular kind. There are a number of different kinds, and some cost more than others.

Mr. SMITH. You gave me a maximum and a minimum, did you not?

Mr. HASKELL. I think so.

Mr. SMITH. What was the minimum, 23 cents? You gave us a price from 23 to 35 cents for gun cotton.

Mr. HASKELL. I am giving you these figures offhand.

Mr. SMITH. I understand that.

Mr. HASKELL. They are correct to the best of my knowledge and belief. I do not pay any particular attention to the productive end. All that I know is what I see in the finished reports.

Mr. SMITH. But if the gun cotton is worth from 23 to 35 cents, and if the powder complete without allowance for interest on the invest-

ment would be worth 43 cents, then the difference would only be from 8 cents to 20 cents between the two.

Mr. HASKELL. I should think so, yes; assuming it is the same on the same kind of powder.

Mr. SMITH. Give us, now, what you think are the extreme limits of cost of gun cotton: from 23 to 35 cents?

Mr. HASKELL. I do not think the kind of gun cotton used in this particular powder from which we furnished these figures ever does cost as much as 35 cents.

Mr. SMITH. What would you say it costs; what would be your judgment about it?

Mr. HASKELL. I should think from 23 cents to 28 cents, perhaps.

Mr. SMITH. So that the adding of 15 cents to 20 cents to the Government's own experience on the production of gun cotton ought to give a very fair idea of what it would cost the Government to produce smokeless powder, ought it not?

Mr. HASKELL. I should not think so because the incidentals, the repairs and labor—

Mr. SMITH. But we are not including any incidentals or repairs in your 43 cents, are we?

Mr. HASKELL. Yes, we are, surely.

Mr. SMITH. I thought you stated that the other items in addition to the 43 cents would make up all aggregate cost.

Mr. HASKELL. The other items that I included in my statement were freight and selling and administrative expense.

Mr. SMITH. But you also added over 17 per cent of the value of the plant involved in selling to the Government, and also the average stock on hand, and to cover the explosions, the repairs, and everything of that kind.

Mr. HASKELL. I said that was the profit—17 per cent—on the investment.

Mr. SMITH. Well, I understood you to explain that that profit was not net profit, but gross profit that had to be largely deducted from to cover explosions, rejections of powder, and other items of that kind.

Mr. HASKELL. I should say that that cost would cover explosions, but it would not cover extraordinary expenses such as the expenditure of additional capital for new kinds of powder, and all that sort of thing.

Mr. SMITH. Have you with you to-day a tabulated statement showing the prices per pound that you have received for smokeless powder during the various times from 1897 up to the present time?

Mr. HASKELL. I have not.

Mr. SMITH. About what has that price been, substantially, either way?

Mr. HASKELL. The price of nitrocellulose powder, as nearly as I can recollect, at first was 90 cents a pound.

Mr. BUCKNER. I think it was a dollar a pound at the start.

Mr. HASKELL. No; 90 cents for the nitrocellulose powder and a dollar for the double-base powder.

Mr. SMITH. What change has taken place from time to time?

Mr. HASKELL. It was reduced to 80 cents a pound.

Mr. SMITH. About when?

Mr. HASKELL. My recollection is that it was at the time of the

Spanish-American war; and to 70 cents a pound about 1901, as near as I can recollect.

Mr. KEIFER. Which kind of powder?

Mr. HASKELL. The nitrocellulose powder.

Mr. SMITH. The single-base powder?

Mr. HASKELL. Yes, sir.

Mr. SMITH. What brought about these reductions?

Mr. HASKELL. In the first place we did not know what powder would cost us, and as the Government commenced to furnish us with a formula which we could work on, and we found we knew how to make it without excessive rejection, then we ascertained that we could make it more cheaply, so we made a reduction on that kind.

Mr. SMITH. Has it been reduced since that 70-cent rate?

Mr. HASKELL. Reduced last summer.

Mr. SMITH. How much?

Mr. HASKELL. To 69 cents, with the additional virtual reduction of cost of alcohol, which before that was furnished us by the Government, and is now furnished by us.

Mr. SMITH. Was that alcohol when it was furnished to you by the Government furnished in addition to these prices of \$1, 80 cents, and 70 cents?

Mr. HASKELL. It was.

Mr. GRAFF. What brought about that reduction?

Mr. HASKELL. The officers of this joint board said that they thought we ought to make some reduction in price, and we had then from time to time been reducing our cost. The lowest cost the Laffin & Rand Powder Company ever made on smokeless powder before the consolidation was 56 cents a pound. At the time, it was selling at 70 cents.

Mr. SMITH. How much of that reduction was caused by the furnishing of the alcohol; in other words, how much is the cost of alcohol per pound of completed smokeless powder?

Mr. HASKELL. Three and one-half cents.

Mr. SMITH. So that the last reduction was equivalent to about a 4-cent reduction?

Mr. HASKELL. Four and one-half cents.

Mr. SMITH. You reduced it from 70 cents to 69 cents?

Mr. HASKELL. And furnished the alcohol at 3½ cents.

Mr. SMITH. Making an actual reduction of about 4½ cents.

Mr. HASKELL. Yes, sir.

Mr. SMITH. And that is the price now?

Mr. HASKELL. With this proviso, Mr. Chairman, that in case the Government buys more than 4,000,000 pounds, the price is to be 65 cents.

Mr. SMITH. Can you now tell us about what the gross revenues of the Du Pont Company have been per year since 1897 from Government contracts?

Mr. HASKELL. I could not tell you that offhand.

Mr. SMITH. Have your contracts with the Government been equal to 6,000,000 pounds a year, or about that?

Mr. HASKELL. They have never amounted to as much as that. I should say that the largest number of pounds could not have exceeded 5,000,000.

Mr. BUCKNER. Four million pounds and something was the largest.

Mr. HASKELL. That would be \$2,800,000 or \$3,000,000 worth.

Mr. SMITH. And you think that is the highest amount you ever received in any one year from all your Government powder contracts?

Mr. HASKELL. I should judge so.

Mr. SMITH. Will you state the gross production of the Du Pont Company, the various plants, per annum, in dollars?

Mr. HASKELL. I can do that. It amounts to about \$29,000,000 a year—that is, the gross sales. The Government sales are slightly over 10 per cent of the total.

Mr. SMITH. You have indicated that your storage room would be consumed for about six months with this powder for the Government. About how long would your machinery be utilized; in other words, about how often a year could you use the same machinery in the manufacture of smokeless powder?

Mr. HASKELL. We do not as a general rule run a plant and then shut it down entirely. Some of the processes can be continued during the twenty-four hours; and at present we have enough to run certain parts of our plants eight hours, other parts ten hours.

Mr. SMITH. I don't think you quite catch my meaning; perhaps I did not make it very plain.

How long in time would be required to produce the amount of smokeless powder equivalent to the capacity of the machinery and room employed?

Mr. BUCKNER. The mechanical part of the work?

Mr. SMITH. To make it until you finished that product.

Mr. HASKELL. The component parts are manufactured first. It takes about four days to manufacture the gun cotton. The powder is then dehydrated and pressed, and at five days from the time we first start to prepare the component parts the powder is pressed and ready for the initial drying, which is in the solvent saving operation, where we extract the alcohol and the ether. It then takes a varying time of from three months to six months, according to the size of the powder, to dry out the solvent, so that it reaches the condition to make ready for presentation to the army or naval officer for acceptance or rejection.

Mr. SMITH. So that your drying rooms, if I may call them such, would only be utilized twice to four times a year?

Mr. HASKELL. That is correct.

Mr. SMITH. In other words, the drying rooms would have an annual capacity of about two to four times the capacity of the quantity they could handle at one time?

Mr. HASKELL. Yes; that is correct.

Mr. SMITH. All other branches of your service would have very many times as much capacity as to the amount they could handle at one time—annual capacity?

Mr. HASKELL. No; for this reason: That a dry house is made usually a unit of from one hundred to two hundred thousand pounds. The amount that we can press at a plant—at our largest plant, say—in one day, double shift, is 10,000 pounds. Now, as the powder is put into a dry house other powder which has been in the process of drying during the time is taken out to make space for it, so that we have only enough capacity in a mechanical way to allow for a small portion of the contents of the dry house.

Mr. SMITH. But inasmuch as the mechanical process would only take from five to ten days, your capacity can be used many times in a year.

Mr. HASKELL. Surely.

Mr. SMITH. While the drying rooms only average from two to four times as much.

Mr. HASKELL. Yes, sir.

Mr. SMITH. What do you estimate the value of all your plants engaged in the manufacture of smokeless and other kinds of powder to be worth? You have given the figures which you treated as properly chargeable to the Government.

Mr. HASKELL. Do you mean the capital invested?

Mr. SMITH. Based upon the same methods with reference to the amount used in the Government service.

Mr. HASKELL. I should think \$18,000,000 or \$20,000,000.

Mr. SMITH. So that you are charging in your estimates a third to a sixth of the whole of your plant as utilized in the Government work?

Mr. HASKELL. No; that is not correct, because there is a very large amount of working capital—that is, outside of that—which is utilized, in addition to the plant.

Mr. SMITH. I understood you to say that the portion of your plant used for Government work varied from three and a fraction millions of dollars to seven millions of dollars.

Mr. HASKELL. \$4,800,000 to \$7,500,000.

Mr. SMITH. Very well, I stand corrected on that. Now, I wanted exactly the same figures on the rest of your plant that was used in the manufacture of explosives for other than the Government.

Mr. HASKELL. Roughly speaking, between \$35,000,000 and \$40,000,000.

Mr. SMITH. In the rest of it?

Mr. HASKELL. I should think so.

Mr. SMITH. That would be from one-tenth to one-fifth only employed by the Government.

Mr. BUCKNER. We have no such condition between the Government and the commercial business, because we do not have to carry such stocks.

Mr. SMITH. That is another item of the value of interest on stock; but I am talking now about the capital that you have invested in carrying on the business in the way of plants and the like. Of course, we can realize that you have to carry Government stock six months, and the other stock a shorter time, and that the average time would be greater with the Government. How much do you estimate of your plant, aside from the amount invested in material for the Government, is utilized in Government work?

Mr. HASKELL. I am sorry that I can not answer, for I had no idea these questions would be asked.

Mr. SMITH. I do not ask them to embarrass you, but because these matters have got to be cleared up to do us any good. Do you assume that 10 per cent of your plant is engaged in Government work? What would be your estimate on that?

Mr. HASKELL. We will send it to you to-morrow, and be accurate about it.

Mr. SMITH. Very well. I suggest you send us first the amount of capital invested in the plant so far as employed ordinarily in Govern-

ment work; and secondly, the average amount of capital invested for material and the like for Government work.

Mr. KEIFER. Do you mean, Mr. Smith, the proportionate amount?

Mr. SMITH. I certainly do not, but the average amount.

Mr. HASKELL. The average amount of capital in plants at work on Government powder.

Mr. SMITH. The average amount in material; and if it varies, give me the limits. I want the average amount in material, and the actual amount in the plant. Then I would like to know exactly the same things as to your other plants outside of the Government work.

The average gross profit upon the Government powder has been in the neighborhood of 75 per cent, has it not, when you make no allowances for interest upon investments?

Mr. HASKELL. Seventy-five per cent on what?

Mr. SMITH. Seventy-five per cent of the actual cost of production of powder.

Mr. HASKELL. I could not answer that question offhand.

Mr. SMITH. You state now that it costs about 43 cents, and you sold it to the Government at all the way from 69 cents——

Mr. HASKELL. The work has cost——

Mr. SMITH. Work and material?

Mr. HASKELL. Yes.

Mr. SMITH. The record shows; but of course your expense of sales to the Government is not equivalent to the expense of sales to other people.

Mr. HASKELL. No, it is not charged that way. It is only practically the actual expense we are under, and it is very light. We charge to the Government part of our business, a proportion of the administrative expense.

Mr. SMITH. That is proper, I think.

Mr. HASKELL. Because a very large proportion of the experimental expense which is included under the head of administration is for Government use, and I think is underestimated in that item.

Mr. SMITH. That might be true. And you have charged what per cent of sales to the Government?

Mr. HASKELL. I have charged for sales and administration $2\frac{1}{8}$ cents a pound.

Mr. SMITH. Turning then to this question of the gross profit and treating it as 47 cents per pound, you have sold at the equivalent of from 69 cents to \$1.03 $\frac{1}{2}$.

Mr. HASKELL. This cost is the present cost. The cost has been much higher.

Mr. SMITH. Has not the material used almost always risen in price constantly?

Mr. HASKELL. Nitrate of soda has risen, but only during the past few months. But the chief changes have been in the better methods that we have been able to employ and there has been a greater reduction from the earlier times rather than an increase of cost.

Mr. SMITH. I am not talking just now of increase of cost of labor, but cotton is a great deal more valuable than it was in 1897, is it not?

Mr. HASKELL. Not the cotton we use.

Mr. SMITH. It is not?

Mr. HASKELL. No, sir.

Mr. SMITH. Is it about the same?

Mr. HASKELL. I don't think that there is any change; it would not show any material increase of cost per pound of powder.

Mr. SMITH. Either increased or diminished?

Mr. HASKELL. There would be no increase because of increased cost of raw material.

Mr. SMITH. Has there been any decrease because of decreased cost of raw material in the last nine years?

Mr. HASKELL. I should say that there had been.

Mr. SMITH. That is very gratifying. It is the first thing we have discovered that has gone down.

Mr. HASKELL. Let me explain that. The manufacture of smokeless powder is a chemical operation. The economy of manufacture depends very largely upon the good practice and the successful practice of producing acids and manipulating acids; and as time has gone by we have found ways of increasing the yield of gun cotton—that is, the percentage of increase we get from the cotton treated—and in reducing the cost of acid by the improved and better processes.

Mr. SMITH. I can readily understand how the processes may be cheapened.

Mr. HASKELL. It is because of that that we have been able to make the reduction to the Government.

Mr. SMITH. The profits are still nearly 50 per cent gross on the present year, are they not?

Mr. HASKELL. On the actual cost?

Mr. SMITH. The gross. I think we both understand what gross profit means. If 47 cents be subtracted from 69 cents it leaves 22 cents.

Mr. HASKELL. Yes.

Mr. SMITH. Is the other powder of your plant sold at anything approaching this gross profit?

Mr. HASKELL. Some of our powders are, but the larger portion of them do not get as large a gross over the delivered cost; they do not yield as large a gross over the delivered cost as those powders do. But the return on the investment is higher because the cost of the plant compared with the profit yielded is not as great.

Mr. SMITH. That is because you can use the same machinery oftener on the other powders?

Mr. HASKELL. Because the machinery does not cost as much, and because compared with the profit yielded—I would like to call your attention again to the statement I made that 75 per cent of our business yielded a greater percentage of profit than does the Government powder on the capital invested.

Mr. SMITH. Which is based upon 17 and a fraction per cent that you claim you get from the Government contract, and not upon the gross profits per pound?

Mr. HASKELL. No, sir.

Mr. SMITH. I understand that and remember it distinctly. We are very much obliged to you gentlemen for appearing before us.

Adjourned at 5.15 p. m.

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